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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/010,663	12/06/2001	Umang Anand	JHUKA1	8701

26663 7590 02/20/2003

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EXAMINER

NGUYEN, DUNG V

ART UNIT

PAPER NUMBER

3723

DATE MAILED: 02/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application N .

10/010,663

Applicant(s)

ANAND ET AL.

Examiner

Dung V Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-52 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other: .

## DETAILED ACTION

### *Drawings*

1. Figures 1-3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 5-12, 14-16, 19-25, 27-29, 32-38, 40-42 and 45-51 are rejected under 35 U.S.C. 102(b) as being anticipated by Katz (USPN 5,921,846). Katz discloses an abrasive, fluid cutting apparatus comprising a chamber 2 having an inlet for receiving a pressurized fluid jet, a port for receiving a flow of abrasive particles which are entrained into the fluid jet, and an exit through which the fluid jet and entrained abrasive exit the chamber 10, a mixing tube 7 having an entry port for receiving the fluid jet and entrained abrasives, an inner wall for directing the flow of the fluid jet and entrained abrasives, and an outlet port 9 through which the fluid jet and entrained abrasives exit the tube 7, wherein the tube entry port is proximate the chamber exit, a lubricating fluid reservoir 6 that surrounds at least a portion of an outer wall of the mixing tube 7, wherein at least a portion of the mixing tube wall being porous, wherein the lubricating

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fluid passes from the lubricating reservoir 6 and through the porous wall to lubricating at least a portion of the surface of the mixing tube wall so as to resist erosion of the tube wall while the fluid jet and entrained abrasives flow through the mixing tube 7, wherein the smallest cross sectional dimension of the passage connecting the mixing tube inlet and outlet ports is in the range of 50-3000 microns (500 microns), wherein the abrasive particles have an average diameter of less than half of the smallest cross sectional dimension of the passage connecting the mixing tube inlet and outlet ports, wherein the thickness of the mixing tube wall is varied along its length to control the flow rate of the lubricating fluid, wherein the mixing tube wall have variable porosity along its length to control the flow rate of the lubricating fluid, wherein the porous mixing tube being fabricated from a porous ceramic material, porous metal, sintered porous material and made by a molding process. Katz also discloses a method for reducing erosion on the inner wall of a cutting jet mixing tube comprising the steps of forming a mixing tube 7 so that at least a portion of its wall is porous, surrounding at least a portion of the outer wall of the mixing tube wall with a lubricating fluid reservoir 6 and forcing lubricating fluid to pass from the lubricating reservoir 6 and through the porous wall to form a lubricating film between the mixing tube wall and the flow of abrasive fluid (note Fig. 1A-1C, col. 2, line 45 to col. 5, line 21).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 4, 5, 17, 18, 30, 31, 43 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katz (USPN 5,921,846). Katz discloses the claimed invention as described above, however, Katz does not disclose a ratio of lubricating fluid kinematic viscosity and carrier fluid kinematic viscosity is in range of 100/1 – 40,000/1 or a ratio of flow rate of lubricating fluid and flow rate of fluid jet and entrained abrasive is in a range of 1/10,000 – 1/20. It would have been obvious to one having ordinary skill in the art at the time the invention was made to select a ratio of lubricating fluid kinematic viscosity and carrier fluid kinematic viscosity is in range of 100/1 – 40,000/1 or a ratio of flow rate of lubricating fluid and flow rate of fluid jet and entrained abrasive is in a range of 1/10,000 – 1/20, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

6. Claims 13, 26, 39 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katz (USPN 5,921,846) in view of Massa et al (USPN 6,425,805). Katz discloses the claimed invention as described above, however, Katz does not disclose the mixing tube is made by using electric discharge machining. Massa et al disclose making a mixing tube by using electric discharge machining (note Fig. 4, col. 9, line 15 to col. 10, line 67). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use electric discharge machining as disclosed by Massa et al in order to form a taper entry port of the mixing tube.

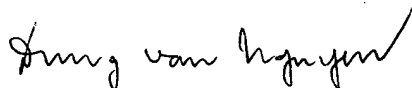
### **Conclusion**

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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung V Nguyen whose telephone number is 703-305-0036. The examiner can normally be reached on M-F, 6:30-3:00.
8. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph J Hail can be reached on 703-308-2687. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9302 for regular communications and 703-872-9303 for After Final communications.
9. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1148.

DVN

February 13, 2003



Dung Van Nguyen  
Patent Examiner